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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,881	01/20/2004	Nathaniel Frampton	2002-019-C	1880
32170	7590	10/02/2006	EXAMINER	
U.S. ARMY TACOM-ARDEC ATTN: AMSTRA-AR-GCL BLDG 3 PICATINNY ARSENAL, NJ 07806-5000			CRAIG, DWIN M	
			ART UNIT	PAPER NUMBER
			2123	

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/707,881	Applicant(s) FRAMPTON ET AL.	
	Examiner Dwin M. Craig	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☒ Claim(s) 1, 5, 6, 10 & 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Claims 1-17 have been presented for examination.

Oath/Declaration

2. It was not executed in accordance with either 37 CFR 1.66 or 1.68.

The oath and declaration are defective because: The oath was not properly signed. When signing an Oath and Declaration using an electronic signature then the signature portion must have forward slashes around the signature...section CFR 37s1.4 Nature of Correspondence and signature requirements:

S-signature . An S-signature is a signature inserted between forward slash marks, but not a handwritten signature as defined by § 1.4(d)(1). An S-signature includes any signature made by electronic or mechanical means, and any other mode of making or applying a signature not covered by either a handwritten signature of § 1.4(d)(1) or an Office Electronic Filing System (EFS) character coded signature of § 1.4(d)(3). Correspondence being filed in the Office in paper, by facsimile transmission as provided in § 1.6(d), with a signature in permanent dark ink or its equivalent, or via the Office Electronic Filing System as an EFS Tag(ged) Image File Format (TIFF) attachment, for a patent application, patent, or a reexamination proceeding may be S-signature signed instead of being personally signed (i.e., with a handwritten signature) as provided for in paragraph (d)(1) of this section. The requirements for an S-signature under this paragraph (d)(2) are as follows;

(i) The S-signature must consist only of letters, or Arabic numerals, or both, with appropriate spaces and commas, periods, apostrophes, or hyphens for punctuation, and the person signing the correspondence must insert his or her own S-signature with a first single forward slash mark before, and a second single forward slash mark after, the S-signature (e.g., /Dr. James T. Jones, Jr./);

Claim Objections

3. Claims 5, 10 and 13 are objected to because the abbreviation “COM” is being used in the claim. The claims should have the phrase “Component Object Model” amended into the claim in order to clarify the metes and bounds of the claimed subject matter. The examiner notes that the

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Applicants' have defined the term "COM" in paragraph [0082] of the specification. Amendment is required.

3.1 Claims 1, 6 and 10 are objected to be cause the word *empirically* is misspelled correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Independent claim 10 is rejected under 35 USC 102(e) as being anticipated by US Patent 6,559,860 Hamilton.

4.1 As regards independent claim 10, *Hamilton* discloses, *A model based controller, comprising: a plurality of mechanical models, wherein a first at least one mechanical model represents at least one mechanical device (Figure 8, Figure 9 reference 108 "Robotic Device" Figures 10-15 and Col. 11 lines 28-67 and Col. 12 lines 1-58 and all of the descriptive text regarding the cited figures) and wherein a second at least one mechanical model represents an empirically derived performance of the at least one mechanical device; a coordinator that allows the second at least one mechanical model to control the first at least one mechanical model for virtual control of the first at least one mechanical model; (Col. 16 lines 11-64 "...During execution of page 1 from the container application 24..." and Col. 1 lines 28-41 "computer*

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simulation programs...", Col. 17 lines 57-63 "...only exist in a virtual sense in a proposed design..." and at least one COM interface that converts the virtual control to actual control of the at least one mechanical device (Col. 12 lines 14-58 and Figures 2 & 11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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5. Claims 1, 5-9, 12, 13 and 14 are rejected under 35 USC 103 (a) as being unpatentable over US Patent 6,559,860 Hamilton in view of US Patent 6,207,936 de Waard.

5.1 As regards independent claim 1, *Hamilton* discloses, *a model based mechanical controller, comprising: at least one modeled mechanical component that models at least one actual mechanical component* (Figure 8, Figure 9 reference 108 “Robotic Device” Figures 10-15 and Col. 11 lines 28-67 and Col. 12 lines 1-58 and all of the descriptive text regarding the cited figures); *an executor resident above said at least one modeled mechanical component coordinates at least one of the modeled mechanical component to provide for virtual control of the at least one modeled mechanical component according to at least one empirically derived task* (Col. 16 lines 11-64 “...During execution of page 1 from the container application 24...”); *and at least one interface that communicatively connects the executor to the at least one actual mechanical component for actual control of the at least one actual mechanical component in accordance with the virtual control* (Col. 1 lines 28-41 “computer simulation programs...”, Col. 17 lines 57-63 “...only exist in a virtual sense in a proposed design...”).

However, *Hamilton* does not expressly disclose, *at least one recipe model, wherein each of said at least one modeled mechanical components is communicatively connected to at least one of said at least one recipe models* however, *Hamilton* does disclose object models (Col. 3 lines 62-67 and Col. 4 lines 1-20).

De Waard discloses, *at least one recipe model, wherein each of said at least one modeled mechanical components is communicatively connected to at least one of said at least one recipe models* (Figure 5 and Figure 24 reference 2401 and Col. 4 lines 49-67 “The model-based predictive temperature controller comprises a thermal process model that relates process input

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thermal energy to process output temperature...” and Col. 5 lines 47-55 “...values specified in the recipe...” and Col. 8 lines 7-67).

Hamilton and *de Waard* are analogous art because they are from the similar problem solving area of programming controllers for mechanical processes.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have used the controller simulation and development environment methods of *Hamilton* with the *model-based controller* and *recipe model* method of *de Waard*.

The motivation to do so would be to provide more accurate control of a mechanism or process by integrating in feedback in real-time to provide greater accuracy in the recipe model that is controlling the process *see de Waard* Col. 4 lines 28-67.

Therefore, it would have been obvious to combine *de Waard* with *Hamilton* in order to obtain the invention as specified in claims 1, 5-9, 12, 13 and 14.

5.2 As regards dependent claim 5, *Hamilton* discloses a COM interface (Col. 12 lines 14-58 and Figures 2 & 11 and all of the descriptive text regarding the cited figures).

5.3 As regards dependent claims 6-8 & 12 *Hamilton* does not expressly disclose two equations with two unknowns and at least two variables and two coefficients, the recipe being manipulated by modification of the at least two variables and the interface provides feedback for active control.

de Waard discloses, at least two equations with two unknowns and two coefficients (Figures 18, 19, 21 and 23A and the descriptive text regarding these figures as well as Col. 10 lines 29-67 and Col. 11-17) with a recipe being manipulated by the modification of the at least two variables (Figures 18, 19, 21 and 23A and the descriptive text regarding these figures as well

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as Col. 10 lines 29-67 and Col. 11-17) and the interface provides feedback for active control (Col. 8 lines 55-67 and Col. 9 lines 1-25 and Figure 2).

5.4 As regards dependent claim 9 *Hamilton* discloses *at least one integrated developer associated with said executor* (Col. 3 lines 62-67 and Col. 4 lines 1-20), however, *Hamilton* does not expressly disclose, *wherein said at least one recipe is developed within said at least one integrated developer*.

de Waard discloses, *wherein said at least one recipe is developed* (Figure 24 reference 2401 and the descriptive text regarding figure 24 and Col. 5 lines 47-55).

5.5 As regards independent claim 13, *Hamilton* discloses, *a method of controlling at least one mechanical device* (Figure 8, Figure 9 reference 108 “Robotic Device” Figures 10-15 and Col. 11 lines 28-67 and Col. 12 lines 1-58 and all of the descriptive text regarding the cited figures), *comprising: modeling the at least one mechanical device to a model; coordinating, within the model executor, to provide virtual control of the at least one mechanical device;* (Figures 8 & 9 and all of the descriptive text regarding the cited figure and Col. 11 lines 29-67 and Col. 12 lines 1-58 and Col. 16 lines 11-63 and Col. 3 lines 62-67 and Col. 4 lines 1-20) *and converting the virtual control to actual control of the at least one mechanical device via a COM interface* (Col. 12 lines 14-58 and Figures 2 & 11 and all of the descriptive text regarding the cited figures).

However, *Hamilton* does not expressly disclose, *modeling a performance of the at least one mechanical device to a recipe*.

De Waard discloses, *modeling a performance of the at least one mechanical device to a recipe*, (Figure 5 and Figure 24 reference 2401 and Col. 4 lines 49-67 “The model-based

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predictive temperature controller comprises a thermal process model that relates process input thermal energy to process output temperature...” and Col. 5 lines 47-55 “...values specified in the recipe...” and Col. 8 lines 7-67).

5.6 As regards dependent claim 14, *Hamilton* discloses, *wherein the developer is communicatively connected to the executor* (Figures 8 & 9 and all of the descriptive text regarding the cited figure and Col. 11 lines 29-67 and Col. 12 lines 1-58 and Col. 16 lines 11-63).

6. Claims 2-4, 11 and 15-17 are rejected under 35 USC 103 (a) as being unpatentable over US Patent 6,559,860 *Hamilton* as modified by US Patent 6,207,936 *de Waard* as applied to claims 1, 5-9, 12, 13 and 14 above, and in further view of US Patent 4,519,860 *Bieg et al.*

Hamilton as modified by *de Waard* teaches a virtual control of a mechanical system using recipes and a model-based mechanical controller as recited in claims 1, 5-10, 12, 13 and 14 for the reasons above, differing from the invention as recited in claims 2-4, 11 and 15-17, in that their combined teaching lacks

(claims 2 & 11) wherein the virtual controller comprises real-time control,

(claim 3) wherein the virtual control controls at least two selected from the group consisting of speed, tension, pressure, power, and volume,

(claim 4) wherein at least one mechanical tolerance is maintained in real time by the virtual control,

(claim 15) wherein at least one of the at least one mechanical device comprises a lathe,

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(claim 16) distributing at least two of the at least one mechanical devices remotely from each other; and associating the executor with a location of one of the at least two remotely distributed mechanical devices,

(claim 17) wherein said coordinating comprises real time modification of the model by the recipe to maintain tolerances within the recipe.

Bieg teaches (claims 2 & 11) real-time control (Figure 23 and Col. 6 lines 37-39 “...process for providing real-time feedback control...”),

(claim 3) *wherein the virtual control controls at least two selected from the group consisting of speed, tension, pressure, power, and volume (Col. 1 lines 66-67 and Col. 2 lines 1-15),*

(claim 4) *wherein at least one mechanical tolerance is maintained in real time by the virtual control (Col. 11 lines 46-65 and Col. 6 lines 37-39 “...process for providing real-time feedback control...”)*,

(claim 15) *wherein at least one of the at least one mechanical device comprises a lathe (Figures 9 & 10 and all of the descriptive text regarding the cited figures as well as Col. 3 lines 39-53),*

(claim 16) *distributing at least two of the at least one mechanical devices remotely from each other; and associating the executor with a location of one of the at least two remotely distributed mechanical devices (Figure 18 and Col. 18 lines 36-48),*

(claim 17) *wherein said coordinating comprises real time modification of the model by the recipe to maintain tolerances within the recipe (Col. 16 lines 22-56 and Col. 11 lines 45-65).*

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Bieg et al. as modified by *de Waard* and *Hamilton* are analogous art because they are all related to programming controllers.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the real-time feedback control while maintaining mechanical tolerance methods of *Bieg et al.* in the model-based mechanical control methods of *de Waard* and *Hamilton* because *Bieg et al.* teaches that there is a need in the art for improved real-time position feedback control when using accurate articulated coordinate measuring machines (ACMM) see Col. 4 lines 38-63.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwin M. Craig whose telephone number is (571) 272-3710. The examiner can normally be reached on 10:00 - 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dwin McTaggart Craig


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9/27/06